

DEPARTMENT OF AGRICULTURE
ANNUAL REPORT
FOR THE YEAR ENDED 31st DECEMBER, 1964.

I. INTRODUCTION

POLICY

The basic policy of the Department remained the same, namely:

- (i) To obtain the maximum degree of self-sufficiency in respect of all food crops that can be economically grown within the country;
- (ii) To improve the quality and quantity of export crops;
- (iii) To develop the Livestock Industry to obtain an additional export trade;
- (iv) To conserve the natural resources;
- (v) To blend the whole into a sound system of agriculture.

2. Unlike many countries, British Honduras has large tracts of land awaiting development, although much of this land is not inherently fertile it is capable under good management of sustaining high yielding crops and pastures. There is a dearth of technical "know how", capital and the tools with which to do the job. The real problem facing the territory is how to break through the level of subsistence agriculture, and how to develop external markets when the internal market is much too small to build export production on.

3. Most of the farmers are hopelessly under-capitalised and the bulk of the agricultural work has still to be done by primitive methods. During 1964 measures were taken to alleviate these conditions, by providing for practical training courses for farmers at Central Farm, by obtaining the necessary finance to set-up a farm planning unit, by initiating research into farm management on small holdings to obtain more settled land use and stop the present widely practised shifting cultivation.

4. Capital was injected on a limited scale through the Agricultural Credits Fund and through the Small Farmers Loan Scheme. Neither, in fact, worked very satisfactorily due to lack of proper supervision and the repayment history has been disheartening. The Farm Planning Unit which was in formation at the end of the year is designed to plan the development of holdings on an individual basis and secure strictly supervised credit.

(b) General Review

5. 1964 was a year of records. Sugar production reaching the all time high of 33,591 tons of plantation white sugar compared with the previous best of 27,840 tons. Rice production also showed a 40% increase over the previous season at 4,508,522 lbs. of paddy. Citrus production continued at a high level as did the production of corn and beans. Livestock production reached the point where a surplus to local requirements occurred, but with production too low to sustain an export market.

6. Although the overall trend was to increasing production this was obtained with comparatively low productivity. With the increasingly competitive prices for most agricultural produce much more attention needs to be given to production costs and management generally.

II. WEATHER

7. The pattern of weather was near to the seasonal averages as could be expected and might thus be described as normal. The early rains provided especially favourable conditions for the development of army worms which caused damage to rice and maize in most areas. October was drier than usual and greatly favoured rice harvesting in Toledo District, November and December saw frequent heavy rains, which made the rice harvest much more difficult in the Belize District, and considerably reduced the Red Kidney bean crop.

III. FOOD CROPS

8. An increase occurred in the production of most of the major food crops, reducing the need to rely on imports. Vegetable production was however sporadic and for the greater part of the year supplies had to be imported.

(a) Beans - Red Kidney

<u>Year</u>	<u>Acreage</u>	<u>Marketing Board Purchases (lbs.)</u>
1962/63	1587	747,088
1963/64	1810	482,627

The heavy rains during the back end of the year caused considerable yield reductions. The Marketing Board purchased at \$14.00 per 100 lbs. at 14% moisture content delivered Belize City.

(b) Maize

<u>Year</u>	<u>Acreage</u>	<u>Marketing Board Purchases (lbs)</u>
1963	13,391	227,981
1964	11,383	775,972

Sufficient corn was produced to meet internal requirements, the drier conditions obtaining in September - October favoured harvesting and yields were above average. The Marketing Board purchased maize at \$4.00 per 100 lbs. at 13% moisture content delivered Belize City.

(c) Rice

<u>Year</u>	<u>Acreage</u>	<u>Marketing Board Purchases (lbs)</u>
1963/64	3131	2,718,006
1964/65	3918	4,508,522

The acreage for the 1964 crop showed a 27% increase over the previous season and sales to the Marketing Board were up 40%. Over 3,000,000 lbs. of paddy came from Toledo District where harvest conditions were favourable, production also showed a considerable increase in the Belize District. The Marketing Board paid \$6.50 per 100 lbs. at 15% or less moisture content delivered Belize City.

(d) Vegetables

Production was spasmodic and normally fell short of requirements, seasonal gluts of cabbages and tomatoes occurred. For much of the year vegetable demands were met by importation mainly from Guatemala.

(e) Plantains

Production generally met the demand but the market suffered from some seasonal shortages and gluts, there has been increased plantings of this crop.

(f) Other Food and Fruit Crops

Supplies of cassava flour, sweet potatoes, etc. were generally adequate, irish potatoes and onions continued to be mainly imported. Large quantities of fruits such as mangoes were available for short periods of the year, much of the fruits having too many blemishes for export purposes.

IV. EXPORT CROPS

9. The production of export crops showed a fair increase over the previous season, partly due to an increase in the bearing acreage and partly to improved husbandry mainly the increased use of fertilizers.

(a) Sugar Cane

The grinding season commenced on the 6th January and continued through to the 15th August. During this period a total of 272,319 tons of cane were harvested, producing 33,591 tons of sugar. Crop data is given below:-

Tons cane delivered	272,319
by Plantations Ltd. 82,386 (30.3%)	
by Cane Farmers Assoc. 189,933 (69.7%)	
Percentage crop as burnt cane	28.9%
Tons sugar produced	33,591
Tons cane per ton sugar	8.11
Acreage reaped (estimate)	14,000
Av. tons/cane/acre (estimate)	19.45
Average tons/sugar/acre (estimate)	2.40
Price of sugar cane sold to the	
Corozal Sugar Factory	\$11.57

The estimate for the 1965 crop season is 37,500 tons of sugar.

(b) Citrus

A survey of citrus plantings showed the following acreages in October 1964. Oranges - 6114 acres, Grapefruit - 2050 acres of which 4038 acres and 652 acres respectively were of bearing age. The two processing companies operated during the year producing as follows:

British Honduras Fruit Company

<u>Month</u>	<u>Oranges x 90 lbs. reaped</u>	<u>Processed 65 Brix Frozen</u>	<u>Shipped - Gls.</u>
January	9,445	9,640	NIL
February	88,329	77,292	38,005
March	100,062	97,300	55,690
April	99,467	98,244	91,605
May	73,215	52,484	43,080
June	20,475	17,763	30,000
	End of 63/64 Crop		
	Commencement 64/65 Crop		
November	11,598	8,615	---
December	3,613	2,674	9,305
Total	406,204 boxes	364,012 gallons	

<u>Month</u>	<u>Grapefruit x 80 lbs.</u>	<u>Processed 58 Brix Frozen gallons</u>	<u>Shipped</u>
January	3,079	1,755	---
February	5,525	3,072	---
March	1,719	1,060	---
April	1,736	1,140	---
May	---	---	7,245 gls.
	End of 63/64 Crop		
	Commencement 64/65 Crop		
November	48,806	25,931	7,945 gls.
December	29,255	16,514	11,945 gls.

Citrus Company of British Honduras Ltd.

Reaping of Oranges and Grapefruits 1964

<u>Months</u>	<u>Oranges x 90 lbs.</u>	<u>Grapefruit x 80 lbs.</u>
January	55,486	21,953
February	95,981	7,500
March	124,822	---
April	105,153	---
May	60,624	---
August	---	13,810
September	---	20,179
October	7,049	26,566
November	5,636	39,759
December	---	29,171

Oranges:

392,416 boxes

Exported

Sections - Nil

Juice - 213,614 cartons, sweetened and unsweetened

Concentrate - 32,039 cartons

914 barrells

Oil - 513 drums of 108 and 400 lbs. each

14,510 lbs. nett.

Grapefruits

252,682 boxes

Exported

Sections - 39,855 cartons

Juice - 10,446 cartons sweetened and unsweetened

Concentrate - 1,100 cartons

129 barrells

Fresh fruit - 36,000 cases

Oil - 14 cases.

The prices paid during the first few months of 1964 were \$2.25 per field box of oranges delivered to factory by the B.H. Fruit Company Ltd. and \$2.00 per box by the Citrus Company Ltd., late in the year the B.H. Fruit Company reduced the price to \$1.25 per field box.

The incidence of pests and diseases was normal excepting for a severe infestation of stink beetles in June and July. Citrus Research work was undertaken by the Caribbean Citrus Research Organisation to which the Citrus Growers Association contributes.

(c) Cacao

Interest in this crop continued to decline, the Humming Bird Development Company shipped 47,180 lbs. of dried beans of which 1,400 lbs. were purchased in Toledo District.

(d) Bananas

Messrs Greene and Atkins shipped a much lower quantity 11,337 boxes (40 lbs. each) than the previous year's 46,533 boxes. A larger quantity could have been exported had shipping been available. A farmer planted 120 acres of Golden Beauty at Cowpen to provide seed material for a possible expansion of the banana industry.

(e) Honey

Honey production showed an increase of 46% whilst the number of hives increased by 36%. Data:

<u>District</u>	<u>Apiaries</u>	<u>Hives</u>	<u>Beekeepers</u>	<u>Production - lbs.</u>	
				1963	1964
Corozal	86	2,886	39	125,704	182,747
Orange Walk	78	2,083	26	105,300	150,894
Belize	5	86	4	---	312
Cayo	4	49	4	702	1,984
Stann Creek	9	78	8	528	3,206
Totals	182	5,182	81	232,234	339,143.

Of the total production 55,608 lbs. were exported, 10 long tons to the United Kingdom and 16½ metric tons to Holland. 10 tons were sold on the local market, whilst the balance of 133 tons is being held in the hopes of improved prices.

The average production of honey per hive was 80 lbs; wax production amounted to 5,831 lbs. and part was locally manufactured into foundation selling at 15 to 20 cents per sheet, the rest of the wax sold at prices ranging from 75 cents to \$1.25 per lb. depending on condition.

V. LIVESTOCK

10. A cattle census taken in October put the national herd at 28,828 head. This figure is known to be lower than the actual cattle population as fears of increased taxation caused some farmers to return lower populations than in fact they had. It is estimated that the actual population is slightly in excess of 30,000 of which some 22,000 head are female stock of all ages.

11. The herd is predominantly of beef type animals, production of which is in excess of local consumption leading to overstocking and an increasing demand for a meat packing plant to obtain export outlets. Animal health remained generally good, parasites both internal and external being the chief problem in cattle and pigs. Swine fever continued to break out sporadically mainly in the Orange Walk District; vaccines being available at cost.

VI. AGRICULTURAL DEVELOPMENT AND EXTENSION WORK

(a) General

12. For most of the year the Department was well below establishment in both specialist and field staff. At the outset of 1964 only two officers were stationed at Central Farm, the main research and development centre of the Department. Deployment of the existing staff enabled the Departmental School of Agriculture at Central Farm to reopen and courses for both farmers and staff were started late in the year. During September the services of an Agronomist were secured and the all essential research work into crop and farm management started. Throughout 1964 the Department was unable to secure the services of a Veterinary Surgeon, Soil Chemist, Plant Pathologist or an Entomologist, much of the development and extension work had perforce to be undertaken on an empirical basis backed by practical experience.

(b) Agricultural Education

13. During September, the Central Farm School of Agriculture which had been closed since 1961 re-opened. Details of the three courses are as follows:

<u>Month</u>	<u>Subject</u>	<u>No attending</u>	<u>Duration</u>
Sept./Oct.	Animal and Grass Husbandry	14 farmers	9 days
Oct./Nov.	Crop and Animal Husbandry	8 Farm Demonstrators	20 days
Nov./Dec.	Agricultural Extension Methods (given by Mexican Dept. of Agric.)	18 Agricultural Staff	10 days.

14. The School library was re-organized, books and pamphlets classified into subject matter and arrangements made so that all members of the staff could obtain books on loan.

(c) Animal Husbandry and Pasture Work

15. A further 120 acres of land was cleared of bush at Central Farm and by the end of the year fifty acres of this had been ploughed and harrowed prior to cropping and pasture establishment. During the dry season, fodder sorghum proved most useful to supplement the grazing, ratooning well after each cut. Considerable work remains to be done on pasture establishment and management, on most farms not excluding Central Farm there is a tendency to overstocking with dire results should the dry season be unduly prolonged.

16. Five Brahman bulls were sold off the farm for breeding purposes, Brahman's and Red Poll's were used for crossing with the creole herd, there was some indication that the Creole x Red Poll crosses were better doers under Central Farm conditions than the Brahman crosses. The liveweight gains were still rather poor averaging only 934 lbs. at 32 months, pointing the need for more selection and improved management. The Red Poll herd was maintained and twelve young bulls were sold to farmers for breeding purposes. Some artificial insemination was carried out with semen imported from the U.S.A. out of Charolais, Santa Gertudis and Aberdeen Angus Bulls.

17. Breeding of Jersey Duroc pigs continued at Central Farm, fifty-three boars and forty-eight gilts were sold to farmers for breeding purposes, in addition some fifty-seven sows belonging to farmers were serviced at the farm. Two pig units were established at Yo Creek Station to increase the spread and rate of upgrading local stock.

(d) Agricultural Shows

18. Two shows were held during the year; one in April at San Felipe in Orange Walk District, the other in November at San Ignacio in Cayo District. Both shows were outstanding successes, and the quality of both crops and stock exhibited show considerable improvement.

(e) General Extension Work

19. During the year the emphasis of extension work was changed from a mass to an individual approach, each District Agricultural Officer being required to maintain records of the more progressive farmers within his District with details of visits and progress. These records form an important starting point for the Farm Planning service which it is hoped to have operating in the near future. In addition to routine advisory work members of the staff carried out numerous Veterinary treatments with on the whole suprisingly good results.

VII. INVESTIGATIONS

20. More detailed work was carried out on sugar cane varieties and fertilizer treatments details of which are given :-

FERTILIZER TRIALS

21. Trial No 1

NITROGEN LEVELS

Soil type	Black Louisville clay	Plot size	60 sq. yds.
Ratoon	3rd	Replicates	7
Variety	POJ 2878	Age at harvest	12 months
		Date at harvest	28-2-64
<u>Treatments</u>		<u>3rd Ratoon Yield (tons cane/acre)</u>	
N1	100 lb/acre Sulphate of Ammonia		36.6
N2	200 lb/acre " "		35.8
N3	300 lb/acre " "		38.4
N4	400 lb/acre " "		37.5

There were no statistically significant differences in yields due to the various nitrogen treatments when the trial was reaped as 3rd ratoon cane in 1964.

22. Trial No 2

PHOSPHATE LEVELS

Soil type	Black Louisville clay	Plot size	240 sq. yds.
Ratoon	3rd	Replicates	4
Variety	POJ 2878	Age at harvest	12½ months
		Date at harvest	5-3-64
<u>Treatments</u>		<u>3rd Ratoon Yield (tons cane/acre)</u>	
P1	60 lb/acre Triple Superphosphate		32.6
P2	110 " " "		35.4
P3	160 " " "		35.1

There were no statistically significant yield differences due to the phosphate treatments when the trial was harvested as 3rd ratoon cane in 1964.

23. Trial No 3

3 x 3 x 3 NPK FERTILIZER TRIALS

Soil type	Stony red Xiabe Loom	Plot size	150 sq. yds.
Ratoon	2nd	Replicates	3 subblocks of 9
Variety	POJ 2878	Age at harvest	12 months
		Date when harvested	13-3-64
<u>Treatments</u>		<u>Mean Treatment yields (tons cane/acre)</u>	
NO	100 lb/acre Sulphate of Ammonia		31.9
N1	200 " " "		34.4
N2	300 " " "		36.2
P0	50 lb/acre Triple Superphosphate		27.0
P1	100 " " "		37.7
P2	150 " " "		37.9
K0	0 Potash		30.3
K1	50 lb/acre Muriate of Potash		35.0
K2	100 " " "		37.3

Although yield increases have been produced from the higher application rates of the fertilizers, none of the increases has reached the normal level of significance when the results are statistically analysed.

24. Trial No 4

Soil type	Black Louisville clay	Plot Size	150 sq. yds.
Ratoon	2nd	Replicates	3 subblocks of 9
Variety	POJ2878	Age of harvest	13 months
		Date when harvested	22-2-64

<u>Treatments</u>	<u>Mean Treatment Yields (tons cane/acre)</u>
NO	100 lb/acre Sulphate of Ammonia 33.8
N1	200 " " " 34.9
N2	300 " " " 35.1
P0	50 lb/acre Triple Superphosphate 29.5
P1	100 " " " 35.7
P2	150 " " " 38.6
K0	0 Potash 34.5
K1	50 lb/acre Muriate of Potash 36.7
K2	100 " " " 32.6
	L.S.D. 5.2

Only phosphate has given a significant yield increase. Thus P2 and P1 have both outyielded P0, but there is no significant difference between the yields of P1 and P2.

2. VARIETY TRIALS

25. Trial No 5

Soil type	Black clay	No of Replicates	6
Ratoon	6th	Age at harvest	12 months
Plot size	100 sq. yds.	Date when harvested	11-2-64

The mean of the previous six reapings, and the yields when harvested in 1964 are given below:

<u>Variety</u>	<u>Mean of Six Previous Crops</u>	<u>1964 Yield TC/A</u>
POJ2878	34.2	28.2
B41227	37.2	36.5
B4098	38.9	39.5
B41211	37.6	36.2
B37161	27.9	23.7
L.S.D. (P: 0.05)		4.7

As usual in this trial B4098 and B41227, two of the recommended varieties have statistically outyielded POJ2878. There was no statistically significant differences in juice quality.

26. Trial No 6

Soil type	Red Xiabe clay	No. of Replicates	2
Ratoon	2nd	Age at harvest	12 months
Plot size	67 sq. yds.	Date when harvested	2-3-64

Below is recorded the means of the two previous reapings and the mean yields of cane per acre of each variety when harvested in 1964.

Variety	Mean of two previous crops	1964 yield (TC/A)
B52298	84.4	54.1
B47419	77.0	44.6
B4744	74.9	46.1
B4098	72.8	42.5
B41227	73.4	45.1
B50112	70.1	39.7
B49119	66.6	45.5
B41211	65.4	42.7
B37161	61.8	36.9
B34104	60.1	37.5
B3337	60.6	38.6
POJ2878	67.3	35.7
L.S.D. (P: 0.05)		7.5

The variety B52298 continues to yield very highly and in this trial has yielded all the other varieties by a statistically significant amount. B4744, B49119, B41227 and B47419 has given very good yields and have also significantly outyielded POJ2878. There were no large differences in Juice quality in the varieties.

27. Trial No 7

Soil type	Shallow black clay	No of Replicates	2
Ratoon	2nd	Age when harvested	13 months
Plot size	75 sq. yds.	Date when harvested	6-4-64

Mean yields from the two previous reapings and the results of the 1964 reaping are shown below:

Variety	Mean of 2 previous crops	1964 Yield (TC/A)
B52298	45.9	58.7
B47419	36.0	46.5
B4744	35.2	43.9
B4098	35.9	48.7
B41227	37.6	46.2
B50112	31.2	31.3
B49119	31.3	34.6
B41211	35.6	36.0
B37161	27.6	22.2
B34104	22.1	23.2
B3337	18.7	16.6
POJ2878	28.5	35.5
L.S.D. (P: 0.05)		11.6

The variety B52298 has outyielded every other variety except B4098 in this trial by a statistically significant amount. The following varieties have also statistically outyielded POJ2878: B4098, B47419 and B41227. There were no notable differences in the quality of juice from each variety.

28. Trial No 8

Soil type	Red Clay	No of Replicates	3
Ratoon	1st	Age when harvested	12 months
Plot size	67 sq. yds.	Date when harvested	25-2-64

The variety yields of the plant cane crop when harvested in 1963 together with the yields of the 1st ratoon harvested in 1964 are given below together with the mean of two crops.

	Previous Plant Crop (TC/A)	1964 1st Ratoon	Mean Yield
B52298	49.9	49.1	49.5
B54277	58.6	42.4	50.5
B3337	45.6	37.4	41.5
B5480	40.2	39.1	39.6
B4098	43.6	42.4	43.0
B5401	38.1	41.7	39.9
B4744	43.4	46.7	45.0
B50112	39.4	40.2	39.8
B47419	46.2	45.2	45.7
B49119	48.9	48.1	48.5
B34104	35.6	36.8	36.2
B4362	49.1	42.2	45.6
B45152	41.7	36.4	39.0
B45151	38.8	37.7	38.2
B41227	52.2	43.8	48.0
B42231	21.6	17.5	19.5
B37161	43.5	31.3	37.4
B41211	50.8	40.7	45.7
POJ2878	36.3	38.3	37.3
L.S.D. (P: 0.05)		9.5	

Two varieties have outyielded POJ2878 by statistically significant amounts, these are B52298 and B49119. No large differences were noted between variety juice quality.

Soil type	Black clay	No of replicates	4
Cycle	Plant cane	Age when harvested	19½ months
Plot size	1000 sq. ft.	Date when harvested	24-1-64

This trial was harvested for the first time in 1964. The yields per acre are recorded below, also the % brix for each variety.

	Yield TC/A	% Brix
B54277	61.6	19.9
B4098	60.6	20.1
B47419	58.5	20.6
B52298	58.3	19.5
B41227	55.9	21.8
B5401	55.2	20.2
POJ2878	54.8	19.7
B4744	51.4	20.1
B45152	51.1	20.2
B4362	50.5	20.9
B45151	47.5	21.0
B5480	42.0	21.6

None of the yields differences reach the normal level of significance, nor do the small differences in juice quality.

30. Trial No 10

Soil type	Black clay	No. of Replicates	3
Cycle	Plant cane	Age when harvested	18½ months
Plot size	800 sq. ft.	Date when harvested	9-5-64

This trial was harvested for the first time in 1964 as plant cane. Below are shown variety yields in tons cane per acre and % brix for each variety.

	<u>Yield TC/A</u>	<u>% Brix</u>
B4362	43.9	24.7
B5789	43.8	23.2
B41227	42.1	23.6
B57150	41.4	24.4
B5736	41.2	24.5
B54277	39.8	23.2
B4098	37.9	23.2
B5744	37.7	20.8
POJ2878	36.4	23.4
B52107	36.2	23.9
B5480	35.9	24.0
B5401	35.8	24.3
B54142	33.9	24.0
B3439	32.2	24.0
B5660	32.1	23.9

L.S.D. (P: 0.05)

Two varieties have statistically outyielded POJ2878 by significant amounts. These varieties are B4362 and B5789. Juice quality measurements do not show any significant variation between varieties.

31. Trial No 11

Soil type	Red Xiabe clay	No of Replicates	5
Ratoon	5th	Age when harvested	11 months
Plot size	100 sq. yds.	Date when harvested	21-5-64

This trial was not harvested last year. Below are given variety yields in tons cane per acre, and the % brix for each variety.

	<u>Yield TC/A</u>	<u>% Brix</u>
POJ2878	33.0	25.0
B3337	30.4	23.1
B37161	27.3	24.6
B34104	29.3	24.6
B4098	42.1	24.2
B41227	37.0	24.8
B41211	34.1	23.9

L.S.D. (P: 0.05) 6.2

The variety B4098 has outyielded POJ2878 by a statistically significant amount. B41227 has also yielded well. Juice quality differences are not significant in this trial.

3. PLANT POPULATION TRIALS

32. Trial No 12

Treatments in this and the following trial (No 13) are identical, and include variations in row spacing and planting distances within the row.

Treatments	A	Cane rows 4 ft. apart		
	B	" " 5 ft. apart		
	C	" " 6 ft. apart		
	1	Continuous planting, seed pieces planted end to end		
	2	Setts planted 2 ft. apart within the row		
	3	Setts planted 3 ft. apart within the row		
Plot size	40 ft. x 40 ft.		Age when harvested	13 months
Exp. design	3 x 3 Graeco-Latin square		Date when harvested	15-4-64
No of replicates	1		Variety used	POJ2878

This trial was planted on Black Louisville clay at San Roman in 1961. It was harvested as plant cane in 1962 and 1st ratoon in 1963. Main treatment yields from these two previous reapings, together with the 1964 results are given below:

	Plant Cane (1962)	1st Ratoon (1963)	2nd Ratoon (1964)	Mean of 3 crops
A	25.5	55.2	42.3	41.3
B	21.6	47.7	39.1	36.1
C	20.7	44.3	38.4	34.5
1	23.5	49.5	36.5	36.5
2	22.6	50.7	44.0	39.1
3	21.6	47.1	40.3	36.3
L.D.S.(P:0.05)	3.6	1.6 (A,B,C only)	--	--

Although no statistically significant yield results have been produced in 1964 from the various treatments, the closer spaced rows still continue to give the best yields of cane per acre.

33. Trial No 13

This trial is identical in treatments to the previous one (No 12)

Plot Size	400 sq. yds.	Age when harvested	11½ months
Exp. design	3 x 3 Graeco-Latin Square	Date when harvested	11-2-64
Soil type	Red Xiabe clay	Ratoon	1st
No. of replicates	1	Variety used	POJ2878

Below are given the main treatment yields for the plant crop, the 1st ratoon crop of 1964, and the mean of both reapings.

	Plant crop (1963)	1st ratoon (1964)	Mean of 2 crops
A	45.1	35.1	40.1
B	46.1	36.5	41.3
C	43.7	36.9	40.3
1	48.5	38.2	43.3
2	46.1	35.6	40.8
3	40.4	34.7	37.5

None of the various treatments has produced statistically significant yield responses but the closer planted cane appears to yield better than that spaced further apart.

4. CONCLUSIONS FROM TRIALS REAPED IN 1964

(a) Fertilizer Trials

34. With nitrogenous fertilizer there has been very little responses from the cane, except in one trial on red soil (N^o 3) when a moderate response was obtained. It seems that 200 lb/acre of Sulphate of Ammonia is sufficient for cane growing on black Louisville soil but 300 lb/acre is required for cane growing on Red Xiabe soil.

The results from the fertilizer trials reaped in 1964 once again emphasize the importance of phosphate fertilizers on both the red and the black soil. Application rates of up to 150 lb/acre Triple Superphosphate continue to give good responses.

The only response to Potash has been produced by second ratoon cane growing on the red Xiabe soil. Application rates of up to 100 lb/acre Muriate of Potash have produced marked yield improvements.

(b) Variety Trials

35. From the seven variety trials reaped in 1964 the following information may be tabulated:

B52298 continues to be the best yielding cane in British Honduras. In its four trials it has each time outyielded POJ2878 three times significantly. It has also on two of these occasions significantly outyielded B41227, B47419, B4744 and on one occasion B4098.

B41227 in seven trials has each time outyielded POJ2878 three times significantly.

B47419 has in each of its four trials outyielded POJ2878 twice by significant amounts.

B4744 in three of its four trials has outyielded POJ2878 only once by a statistically significant amount.

Of the newer varieties the following appear interesting as potentially high yielding cane varieties:

B4362	B5763	B5401
B5789	B54277	B57150

(c) Plant Population Trials

36. The results of both spacing trials leave no doubt that rows 6 ft. apart and setts planted 3 ft. apart within the rows are not suited to high yields of cane per acre. In Trial N^o 12 on the black soil 4ft. row spacing has given a yield increase of approximately 7 tons cane per acre over the row spacing of 6 ft.

End to End planting of cane setts, or setts planted 2 ft. apart has given better yields than when the setts were spaced 3 ft apart.

5. IMPORTATION OF NEW CANE VARIETIES

37. Early in November three seed pieces each of three 1959 cane varieties bred in Barados were received by air. The numbers are as follows:

59136

59163

59233.

Germination as usual suffered because of the prolonged air flight, transshipment delays, but stools of each variety are now well established at the Cane Station, San Roman.

6. SEEDCANE PRODUCTION SCHEME

38. The objective of the scheme in 1964 was to plant 200 acres of improved cane varieties, which would be ready for distribution as seed material for farmers from mid 1965 onwards. The objective was achieved as a result of a great effort on the part of the whole of the staff of the Department of Agriculture in the Corozal area.

39. At the end of January, work began by the Land Clearing Unit tractors in preparation for planting. Three blocks of land were selected and cleared but due to a variety of causes e.g. old machines, the difficulty of maintenance work; this work was not completed until October. Planting of the cane began in May when the rains began and ended in October as soon as the last section of land was ready for planting. The early planted blocks were growing very well at the end of the year, but about 25 acres of the last block to be planted in October suffered from the year end drought and has not made very satisfactory progress. The acreage of each variety planted is given below:

MECATES

Variety	Xiabe Block 1	Xiabe Block 2	San Andres	Total
B52298	335	-	-	335
B4098	208	138	-	346
B1227	342	42	-	384
B47419	-	166	110	276
B4744	69	-	96	165
B54277	-	-	79	79
Total	954	346	285	1585.

VII. PESTS AND DISEASES

40. No serious outbreak of any major pest or disease was reported during the year. There were the usual isolated outbreaks of caterpillars, rats and froghoppers but very little actual damage was caused by these. Plantations Ltd. adopted widespread insecticidal dusting against froghoppers but this was more a measure of prevention and most other farmers did not put insecticide on their cane fields. In the seedcane block at San Andres about 10 acres was almost completely defoliated by caterpillars but upon clean weeding this area, the attack was brought under control.

VIII. LAND CLEARING UNIT

41. The Land Clearing Unit operated in all Districts excepting Orange Walk during 1964. In Toledo and Belize Districts work was mainly undertaken for small farmers for rice production; in Corozal District for the seed cane production scheme; in Cayo and Stann Creek Districts for citrus planting. The scattering of the unit caused maintenance problems and increased the cost of operation, although the charges remained the same, namely \$12.00 and \$6.00 per running hour for D-7's and D-4's respectively. Work undertaken involved 4,985 tractor hours of which 4,303 hours were spent on land clearing operations, and the balance on windrowing, ploughing, drainage, grading and roadwork.

IX. STAFF

42. A list of the senior staff position is contained in Appendix No I. The posts of Veterinary Surgeon (2), Plant Pathologist, Entomologist remained unfilled throughout the year. The post of Agronomist was filled in September, 1964.

X. ACKNOWLEDGEMENTS

43. It gives me great pleasure to acknowledge the help and cooperation which this Department has received from both official bodies and from other Departments in Government.

Chief Agricultural Officer

Appendix No I

SENIOR STAFF POSTINGS AS AT 31ST DECEMBER, 1964

<u>Title</u>	<u>Name</u>	<u>Station</u>
Chief Agricultural Officer	E.W. King	Belize City
Principal Agric. Officer	M.K. Ghopin, M.B.E.	Belize City
Agric. Education Officer	E.G. Russell	Central Farm
Agricultural Officers	R.S. Pitt	Toledo
	G.C. Aguilar	Orange Walk
Agronomist	M.W. Silvey	Central Farm
Livestock Officer	O.O. Orio	Central Farm
Cane Farming Officer	B. Walker	Corozal
Agricultural Engineer	J.B. Hutchinson	Central Farm
Asst. Agricultural Officers	J.A. Lizama	Corozal
	C.D.W. Atkins	Belize
	J.A. Swasey	Stann Creek
	T.L. Brackett	Toledo
	W.A. Grant	Cayo
Veterinary Field Officer	T.T. Ramos	Belize
	F.F. Orio	Belize

DISTRICTS AND STATIONS	SUMMARY OF RAINFALL FOR 1964														TOTAL 1964	TOTAL 1963	AVERAGE 10 YEARS
	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JUL.	AUG.	SEPT.	OCT.	NOV.	DEC.					
<u>COROZAL DISTRICT</u>																	
Corozal Town	7.27	.32	.22	NIL	2.40	9.77	10.18	6.25	15.60	2.46	5.90	1.71	62.08	47.16	47.68		
Corozal Agstat.	3.46	.06	.14	NIL	2.90	10.33	12.01	4.17	15.54	2.00	6.13	3.94	60.68	30.38	N.A.		
Louisville	7.30	NIL	1.19	.78	2.76	16.86	10.17	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	39.95	N.A.		
Corozal Sugar Factory	5.79	NIL	.18	.03	2.72	12.20	10.25	4.56	16.92	1.76	4.82	4.47	63.90	32.53	N.A.		
Cano Station (San Roman)	6.74	.30	1.67	.21	2.56	12.08	13.20	3.55	13.39	2.84	5.21	5.93	67.68	34.47	N.S.		
<u>ORANGE WALK DISTRICT</u>																	
Orange Walk Agstat.	6.51	.08	.73	.30	2.60	15.16	9.91	6.62	8.89	1.30	7.15	9.08	68.33	50.16	N.A.		
Gallon Jug	2.32	NIL	NIL	1.12	2.24	6.84	9.87	4.97	4.40	4.07	7.27	10.13	53.23	43.61	58.87		
<u>BELIZE DISTRICT</u>																	
Belize International Airport	2.89	.43	.73	.63	.50	9.03	12.48	9.65	12.43	2.67	10.70	14.25	77.64	52.92	69.06		
Gracie Rock	2.57	1.21	1.66	.12	4.30	8.96	13.63	7.65	9.71	1.35	8.34	9.08	68.58	60.79	75.28		
Maskall	7.80	.34	1.50	NIL	1.70	11.44	13.66	7.71	13.03	3.45	10.26	9.78	80.67	59.90	68.14		
Ambergris Caye	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	4.58	3.04	9.47	7.73	N.A.	N.A.	N.S.		
<u>CAYO DISTRICT</u>																	
Central Farm	3.24	.25	3.00	.17	.78	15.83	7.74	5.60	1.10	1.50	8.63	5.78	53.68	64.59	63.80		
Augustine Pine Ridge	2.35	1.22	.55	1.02	3.39	9.39	5.64	2.87	9.34	4.85	12.92	9.05	62.59	49.44	62.94		
Cooma Cairn	2.40	2.40	.60	.64	2.19	8.90	9.74	5.32	6.52	12.16	19.95	14.10	84.92	84.24	N.S.		
Norland	2.67	.72	2.03	1.39	.62	13.73	8.44	5.67	2.96	2.10	7.14	6.79	54.31	50.00	60.56		
Mai Camp	2.48	1.56	.28	2.09	.99	8.46	6.45	4.08	7.84	4.50	12.38	8.94	60.05	50.79	N.S.		
Sibun Camp	1.11	1.06	1.44	.30	4.23	20.19	19.07	11.42	8.69	5.86	11.43	10.97	95.77	92.03	N.S.		
Caves Branch	2.20	1.79	1.89	.97	5.36	19.32	18.93	9.00	8.41	5.17	11.43	11.20	95.72	89.38	N.S.		
Roaring River	1.89	2.16	1.57	.80	1.25	21.74	18.73	7.88	5.83	3.15	9.48	8.86	84.35	80.00	N.A.		
Never Delay	1.38	.63	1.38	.41	2.00	12.95	11.54	5.26	6.87	1.80	9.66	7.83	61.71	61.42	N.S.		
Benque Viojo	1.29	.30	1.86	.43	.50	5.35	5.02	2.30	3.30	3.20	4.94	3.75	32.24	N.A.	N.A.		
<u>STANN CREEK DISTRICT</u>																	
Stann Creek Agstat.	2.07	.70	1.52	1.91	6.44	14.03	9.21	7.46	8.94	3.55	9.78	8.62	74.23	67.70	84.01		
Cow Creek	1.29	.25	2.80	1.60	5.54	17.32	17.24	10.76	12.28	4.96	12.63	9.93	99.65	N.A.	N.A.		
Pomona	1.73	.86	3.48	.95	9.26	16.90	12.11	8.21	14.52	2.30	11.13	10.50	94.95	69.32	94.45		
Middlesex	1.72	1.85	1.85	1.56	5.43	25.71	23.19	13.78	13.20	4.96	10.80	11.39	115.44	91.39	107.97		
Melinda Forest Station	2.22	.90	1.90	1.81	6.42	14.09	7.94	7.84	5.28	3.60	9.69	9.13	70.82	65.54	N.S.		
Savannah Forest Station	.94	1.02	1.96	2.68	6.88	7.27	17.29	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	77.29	N.A.		
Sittee River	.91	1.49	1.66	1.42	1.77	10.08	9.25	7.25	6.13	3.69	6.36	10.78	60.79	69.88	N.A.		
Alta Vista	1.74	1.03	3.83	1.55	7.25	22.48	15.83	8.91	25.09	4.16	11.61	13.21	106.74	79.94	N.A.		
Melinda Farm	1.72	.76	2.74	.42	3.57	11.75	6.63	5.05	8.48	4.27	8.28	8.61	62.28	N.A.	N.A.		
<u>TOLEDO DISTRICT</u>																	
Punta Gorda Town	1.87	3.03	2.38	1.63	3.04	26.34	37.51	32.41	22.84	7.00	12.23	11.53	161.81	156.00	161.54		
Agstat. Toledo	2.02	1.77	1.15	2.51	3.60	30.81	34.34	24.83	20.19	3.55	9.19	9.36	143.32	124.73	149.95		
Machaca Forest Station	3.00	.84	.71	1.25	3.63	18.57	30.53	28.78	15.71	5.09	9.85	9.01	127.07	109.99	N.S.		
Columbia Forest Station	1.56	.92	.38	1.72	4.36	17.07	24.02	25.60	8.06	6.42	7.35	6.74	105.27	109.40	N.S.		
Monkey River Town	1.60	1.63	1.98	1.76	5.18	10.72	19.71	18.56	7.05	2.94	8.85	10.35	90.33	74.23	N.S.		
Crique Sarco	2.00	.43	.33	2.74	2.14	12.13	22.02	23.10	N.A.	N.A.	N.A.	N.A.	N.A.	123.80	N.A.		
Barranco	3.61	1.42	1.04	5.85	7.20	35.20	43.36	34.25	16.09	3.28	9.48	12.94	173.72	N.A.	N.A.		
Hunting Caye	4.34	3.48	.30	.91	2.41	7.21	14.54	N.A.	6.06	12.67	19.66	N.A.	N.A.	N.A.	N.A.		
San Antonio	NIL	NIL	1.50	1.80	3.88	7.93	15.47	12.58	8.51	3.66	6.35	8.51	70.21	N.A.	N.A.		

N.A. - Not available

N.S. - New Station

METEOROLOGICAL DATA 1964

TEMPERATURESRELATIVE HUMIDITY %BAROMETRIC PRESSURE

	<u>Mean Monthly Maximum</u>					<u>Mean Monthly Minimum</u>					<u>Mean Monthly</u>					<u>Barometric Pressure</u>				
	Belize Inter- National Airport	Stann Creek Agstat.	Toledo Agstat.	Central Farm	San Roman Cane Station	Belize Inter- National Airport	Stann Creek Agstat.	Toledo Agstat.	Central Farm	San Roman Cane Station	Belize Inter- National Airport	Stann Creek Agstat.	Toledo Agstat.	Central Farm	San Roman Cane Station	Belize Inter- National Airport	Stann Creek Agstat.	Toledo Agstat.	Central Farm	San Roman Cane Station
January	82	84	78	N.A.	N.S.	67	82	64	N.A.	N.S.	73	N.A.	81	N.A.	N.S.	30.00	N.A.	N.A.	N.A.	N.S.
February	85	87	81	85	N.S.	69	65	66	63	N.S.	68	88	79	N.A.	N.S.	29.86	N.A.	N.A.	N.A.	N.S.
March	89	87	85	83	N.S.	74	70	67	53	N.S.	67	89	83	N.A.	N.S.	29.91	N.A.	N.A.	N.A.	N.S.
April	90	88	87	91	N.S.	75	72	70	69	N.S.	74	88	88	N.A.	N.S.	29.90	N.A.	N.A.	N.A.	N.S.
May	90	88	87	93	N.S.	75	72	71	71	N.S.	75	82	92	N.A.	N.S.	29.89	N.A.	N.A.	N.A.	N.S.
June	85	87	85	88	N.S.	75	86	71	73	N.S.	85	90	92	N.A.	N.S.	29.88	N.A.	N.A.	N.A.	N.S.
July	83	86	83	86	89	75	72	69	72	70	82	92	97	85	95	29.92	29.58	29.44	N.A.	30.02
August	89	87	86	85	91	75	73	71	73	70	82	90	98	90	93	29.91	30.06	29.43	29.77	29.90
September	88	85	84	82	89	74	73	71	72	70	82	83	97	91	95	29.89	30.05	29.52	29.97	29.85
October	86	85	84	84	87	69	68	67	66	66	67	87	86	91	95	29.92	30.09	29.52	29.97	29.85
November	85	83	N.A.	83	85	70	70	66	63	65	75	91	82	91	95	29.94	30.11	29.59	29.87	29.91
December	82	82	N.A.	83	87	63	69	65	67	66	89	90	85	93	96	30.02	30.13	29.61	29.86	29.00

N.A. - Not Available

N.S. - New Station

<u>ARTICLES</u>	<u>QUANTITIES/NUMBER</u>	<u>VALUE</u>
Bovine Cattle	46	\$ 4,610
Sheep and Goats	74	582
Swine (live)	1,812	37,019
Poultry (live)	11,784	22,437
Eggs	30,805 doz.	19,277
Fish & Fish Preparations	64,600 lbs.	23,251
Lobsters (whole)	23,800 "	9,715
Lobsters (tails)	379,200 "	471,021
Conch	120,900 "	26,193
Fish (dried, smoked or salted)	31,900 "	3,718
Stone Crab	100 "	45
<u>Fruit and Vegetables</u>		
Oranges (fresh)	224,800 "	5,193
Tangerines	2,100 "	75
Grapefruit	2,531,800 "	234,226
Plantains and Bananas	18,266 bunches	18,034
Corn	100 lbs.	2
Coconuts (whole)	239,700 nuts	14,063
Other edible	900 lbs.	12
Papayas	2,000 "	1,000
Other Fresh Fruit	87,600 "	3,160
Grapefruit Segments	1,138,300 "	229,028
Grapefruit Concentrate	250,000 "	60,250
Orange Concentrate	6,055,400 "	2,618,534
Grapefruit Juice	1,121,800 "	98,341
Orange Juice	9,889,400 "	1,433,574
Chicle	272,200 "	247,401
Molasses	789,534 gals.	147,964
Unrefined Sugar	80,088,900 lbs.	6,242,208
Natural Honey	75,985 "	15,742
Cacao Bean	85,300 "	28,025
Sweet Orange Oil	66,472 "	47,949
Grapefruit Oil	700 "	1,008

LIVESTOCK

List of main treatments carried out by Staff of the Department
of Agriculture in 1964

Disease or Treatments	Horses	Cattle	Pigs	Sheep	Poultry	Dogs	Cats
Worming	169	291	437	37	176	79	-
Castration	181	246	552	25	-	12	2
Mange	17	11	6	-	-	20	1
Wounds & Screw worm infection	73	105	50	10	100	24	1
Colic	31	1	1	-	25	-	-
Retention of Urine	8	1	2	-	-	1	-
Scouring	2	20	-	-	-	-	3
Mastitis	-	20	1	-	-	-	-
Infectious warts	-	51	-	-	-	-	-
Coccidiosis	-	7	1	-	1016	2	-
Tetanus	10	-	-	-	-	-	-
Paralysis	-	-	-	-	-	1	-
Fowl Pox	-	-	-	-	521	-	-
Pneumonia	4	7	99	-	30	2	-
Influenza	6	1	4	-	805	1	1
Coryza	-	-	-	-	1365	5	-
T.B. Test	-	61	-	-	-	-	-
Removal of Placenta	7	21	-	-	-	-	-
Spraying	15	484	-	-	20	1	-
Distemper	16	5	10	-	-	34	3
Mal-nutrition	4	10	-	-	-	-	-
Abscess	1	1	2	-	-	2	1
Diarrhoea	-	1	22	8	145	-	-
Ear Canker	-	-	-	-	-	4	-
Dystocia	-	4	-	-	-	-	-
Constipation	2	-	6	-	-	-	-
Babesia	-	1	-	-	-	-	-
General Debility	3	-	2	-	-	-	-
Dropsy	-	-	1	-	-	1	-
Anemia	1	-	33	-	-	2	-
Post-mortem	-	-	1	-	-	2	1
Infectious Uterus	1	-	-	-	-	-	-
Infected Penis	-	-	-	-	-	1	-
Cutting of tusks	-	-	1	-	-	-	-
Food Poisoning	-	-	-	-	41	-	-
<u>Preventitive Vaccinations:</u>							
Newcastle Disease	-	-	-	-	326	-	-
Hog Cholera	-	-	639	-	-	-	-
Fowl Cholera	-	-	-	-	31	-	-

SLAUGHTER HOUSE RETURNS FOR THE COUNTRY

Months	CATTLE			PIGS			SHEEP		
	Number	Total Dressed Weight/lbs.	Av. Dressed Wt./Animal	Number	Total Dressed Weight/lbs.	Av. Dressed Wt./Animal	Number	Total Dressed Weight/lbs.	Av. Dressed Wt./Animal
January	336	83,432	245	279	17,945	64	7	168	24
February	377	90,444	239	452	29,111	64	14	467	33
March	321	75,142	234	340	20,149	59	16	448	28
April	387	101,414	262	273	17,286	63	25	798	31
May	361	86,227	238	255	17,259	67	19	564	37
June	317	83,603	263	243	16,334	67	15	411	27
July	356	89,656	251	262	14,724	56	40	1,222	30
August	356	85,395	250	200	12,041	59	14	400	28
September	342	98,213	260	204	11,245	55	20	731	36
October	362	88,940	245	278	17,245	62	11	301	27
November	335	81,171	242	233	15,705	67	7	205	29
December	345	84,506	244	293	19,686	67	17	486	28
TOTALS	4,195	939,144	247	3,312	208,730	62	205	6,201	29

